

## ABSTRACT

A method automatically corrects dust artifact within images acquired by a system including a digital acquisition device including a lens assembly. Multiple original digital images are acquired with the digital acquisition device. Probabilities that certain pixels correspond to dust artifact regions within the images are determined based at least in part on a comparison of suspected dust artifact regions within two or more of the images. Probable dust artifact regions are associated with extracted parameter values relating to the lens assembly when the images were acquired. A statistical dust map is formed including mapped dust regions based on the determining and associating. Pixels corresponding to correlated dust artifact regions are corrected within further digitally-acquired images based on the associated statistical dust map.